

Introduction to Exterior Wall Cladding Substrates

- **Supports the Exterior Wall Cladding**
- **Could be the building itself: concrete block, brick or stone, precast or poured concrete**
- **Could be sheathing independently attached to the framing: plywood, gypsum board, OSB, cement board**
- **WRB (Weather Resistive Barrier) attached to the sheathing: sheet applied or liquid-applied membrane**

Exterior Gypsum Sheathing Substrates Require WRB



Glass Mat Gypsum Substrates Require WRB



Cement Board Substrates: Requires WRB behind Substrate



OSB Substrates Require WRB



Plywood Substrates Require WRB



Insulated Concrete Forms (ICF) Substrate: Do Not Require WRB



Tilt-up Pre-Cast Concrete Substrate: Do Not Require WRB



CMU Masonry Substrate: Do Not Require WRB



Attaching Wall Cladding to Substrate

- **Adhered barrier system**
 - Adhesive between EPS board and the non-moisture sensitive substrate.
 - Compatible adhesive
 - Built as a barrier system
- **Adhered water-managed system**
 - Adhesive between EPS board and a liquid-applied WRB
- **Mechanically fastened system**
 - Screws secure EPS over a sheet applied WRB

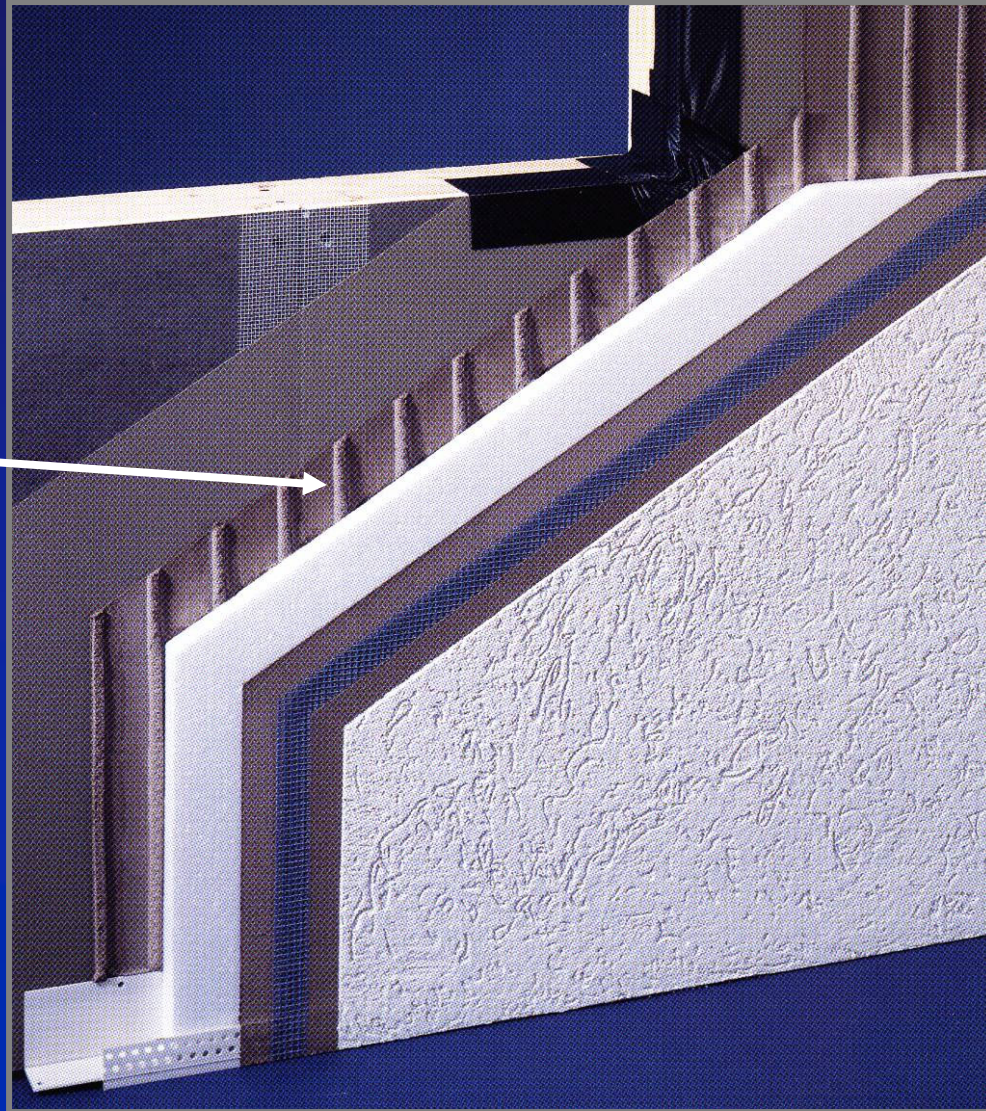
Adhesive Application – Notched Trowel



Notch size, spacing, shape, direction per manufacturer

Unblocked drainage space

Vertical adhesive ribbons create channels for drainage



Moisture resistance of WRB

- **American Association Of Textile Chemists & Colorists Method AATCC-127 Hydrostatic Head Test**
 - Requirement : 55 cm static pressure for 5 hours without leaking. Used for high-perm materials.
- **ASTM D779 Water Resistance of Sheet Materials by the Dry Indicator Method**
 - Measures time for water to soak through under zero pressure. Minimum Pass Time 1/6 hour (10 minutes).
- **ASTM E331 – Wind Driven Rain Test (modified by ASTM E1677, which sets test parameters)**
 - Water spray at 5 gal/s.f./hr at 15 mph for 15 minutes.
 - Also used for Liquid-Applied moisture barriers.

Sheet-applied WRB

- Horizontal joints overlap and are “shingled” from the bottom to the top.
- Vertical joints overlap.
- Joints also may be taped.
- Stapled to the substrate.
- Integrate with flashing, window flanges, and penetrations. (Details will be discussed in separate session)
- Exterior Wall cladding is mechanically fastened over the WRB.

Liquid-applied WRB

- May be roller-applied, or trowel-applied, or spray-applied depending on the manufacturer
- May be premixed and ready-to-use, or may require addition of mixing materials and water, depending on the manufacturer

Liquid-applied WRB - application

- May contain a preservative to help control mold.
- Sheathing joints often receive a separate application of material, including mesh.
- Highly moisture sensitive substrates, such as OSB, may receive additional coats of material.
- Waterproofing (bitumen) tapes may be used to transition to accessories and flanges or trims at terminations or penetrations.
- Exterior Wall Cladding may be adhered using vertical ribbons of adhesive to create drainage channels.

Accepting the Exterior Wall Cladding Substrate

- **Proceeding with installation of exterior wall cladding implies acceptance of the substrate:**
 - **Appropriate type**
 - **Properly prepared: leveled, smooth, patched**
 - **Sound condition: no deterioration, nothing loose**
 - **Correctly applied: orientation, spacing, layout**
 - **Correctly fastened: spacing, type, seating**
 - **Clean: no contaminants, oil, dirt, dust, spatter**
 - **Dry: no water or frost**